What is claimed is:

1. A method of forming an electrode layer for a flat capacitor, the method comprising:

placing a capacitor material sheet between a punch and a die, the punch guided by a punch guide, there being no stripper plate between the punch guide and the die; and

actuating the punch to punch an electrode layer out of the sheet.

2. The method of claim 1, wherein placing a sheet includes placing a sheet including aluminum.

3. The method of claim 1, wherein actuating the die includes actuating the die upwardly.

4. The method of claim 1, further comprising picking the punched electrode layer out of a back side of the die.

5. The method of claim 1, wherein the electrode layer is punched out of the sheet without applying any compression forces on the sheet before the punch contacts the sheet.

6. An apparatus comprising:

a die having a die hole;

a punch guide;

a punch located within the punch guide;

wherein the punch guide and the die have a fixed distance therebetween such that there is no compression on a work piece placed between the die and the punch before the punch contacts the workpiece.

7. The apparatus of claim 6, wherein the punch guide and the die are made of a carbide.

8. The apparatus of claim 6, further including a punch block coupled to the punch and a punch holder coupled to the punch guide, wherein the punch block includes an outer perimeter shape configured to mate with one or more inner surfaces of the punch holder.

9. The apparatus of claim 6, further comprising a pick-up member to pick a punched piece off of a punch surface of the punch.

10. A method of forming an electrode layer for a flat capacitor, the method comprising:

placing a sheet between a punch and a die having a die hole;

delivering a lubricant to a periphery of the die hole, wherein the lubricant is concentrated to a pre-determined location on the periphery; and

actuating the punch to punch an electrode layer out of the sheet.

11. The method of claim 10, wherein delivering a lubricant includes delivering a fluorinated or partially fluorinated fluid.

12. The method of claim 10, wherein placing a sheet includes placing a sheet having an aluminum oxide portion and an aluminum portion, the lubricant being

concentrated on the periphery of the die hole at the location where the punch cuts through the aluminum portion.

13. An apparatus comprising:

a die having a die hole;

a punch guide opposing the die; and

a punch located within the punch guide;

wherein the die includes a lubrication dam located around a periphery of the die hole and communicating with a lubrication inlet, the lubrication dam configured to concentrate a lubricant at a pre-determined location on the periphery of the die hole.

14. The apparatus of claim 13, wherein the dam includes a ridge located about an upper surface of the die hole.

15. The apparatus of claim 13, wherein the pre-determined location is less than 1/4 of the total perimeter length of the periphery of the die hole.

16. The apparatus of claim 13, wherein the die and punch are formed of a carbide.

17. A method of forming an electrode layer for a flat capacitor, the method comprising:

placing a sheet between a punch and a die having a die hole;

actuating the punch to punch an electrode layer out of the sheet; and

applying a lubricating fluid to a periphery of the die hole, the lubricating fluid being compatible with a chemistry of the sheet such that the lubrication does not need to be cleaned of the electrode layer after being punched.

18. The method of claim 17, wherein the lubricating fluid is delivered to a pre-determined location on the periphery.

19. The method of claim 17, wherein the lubricating fluid includes a Fluorinert™ fluid.

20. The method of claim 17, wherein the sheet includes an aluminum sheet having an aluminum oxide portion and a pure aluminum portion, with the Fluorinert is delivered to a portion of the periphery of the die hole proximate the pure aluminum portion.

21. A method of forming a punch guide and die set, the method comprising:

forming a first hole in a block of material;

forming at least two guide holes in the block of material;

separating the block of material into a punch guide section and a die section such that the punch guide section includes a portion of the first hole and a portion of the at least two guide holes and the die section includes a portion of the first hole and a portion of the at least two guide holes;

removing at least some material from a face of one of the punch guide section the die section; and

coupling the punch guide section and the die section together through the guide holes such that the first hole portion of each section directly opposes the first hole portion of the other section across a gap formed by the removal of the material.

22. The method of claim 21, wherein forming the first hole includes using wire EDM to form the first hole.

23. The method of claim 21, wherein the block of material is a carbide having a hardness of approximately 90 to 100 Rockwell C hardness.

24. An apparatus comprising:

a die having a die hole;

a punch guide opposing the die; and

a punch located within the punch guide, wherein the punch includes a punch surface having a substantially planar material contact surface having a compound shear angle relative to the die hole.

25. The apparatus of claim 24, wherein the punch surface is shaped such that the surface periphery includes at least two relatively large radii and at least two relatively small radii, and wherein the compound shear angle of the punch surface is oriented such that the highest point on the punch surface is located at one of the at least two larger radii and the lowest point on the surface is located at one of the at least two larger radii.

26. The apparatus of claim 24, wherein the punch surface includes a slope of approximately 0.006.

27. The apparatus of claim 24, wherein the punch surface includes a slope between approximately 0.006 to approximately 0.018.

28. A method of forming an electrode layer for a flat capacitor, the method comprising:

placing a sheet between a punch and a die, the punch having a punch surface having a compound shear angle; and

striking the sheet with the punch such that the punch surface enters and exits the sheet at relatively low stress points at an interface between the sheet and the punch surface.

29. The method of claim 28, wherein placing the sheet includes placing a sheet including aluminum.

30. The method of claim 28, wherein placing the sheet includes placing a sheet including aluminum oxide.

31. The method of claim 28, wherein the punch surface being shaped such that a surface periphery of the punch surface includes at least two relatively large radii and at least two relatively small radii, wherein the compound shear angle of the punch surface is oriented such that the highest point on the punch surface is located at one of the at least two larger radii and the lowest point on the surface is located at one of the at least two larger radii.

32. An apparatus comprising:

a die having a die hole;

a punch guide opposing the die; and

a punch located within the punch guide, the punch having a punch surface being shaped such that a perimeter of the punch surface includes at least two relatively large radii and at least two relatively small radii, wherein a clearance between the punch perimeter and the die hole is substantially constant around the entire perimeter of the punch surface.

33. The apparatus of claim 32, wherein the clearance is substantially constant within a tolerance of +/- 0.00050 inches.

34. The apparatus of claim 32, wherein the punch guide and the die are formed of a carbide.

35. The apparatus of claim 34, wherein the punch guide and the die are formed of a carbide having a hardness of between about 90 and 100 Rockwell C.

36. A method of forming an electrode layer for a flat capacitor, the method comprising:

providing a punch having a punch surface shaped such that the surface perimeter includes at least two relatively large radii and at least two relatively small radii;

providing a die having a die hole, wherein a clearance between the die hole and the punch surface perimeter is substantially constant;

placing a sheet between the punch and a die; and

actuating the punch to punch an electrode layer out of the sheet.

37. The method of claim 36, wherein placing the sheet includes placing an aluminum sheet.

38. The method of claim 36, wherein placing a sheet includes placing a sheet including aluminum oxide.

39. The method of claim 36, wherein the clearance between the die hole and the punch surface perimeter is approximately 0.00005".

40. An apparatus comprising:

a die having a first side and a second side and a die hole extending through the die and open on the first side and the second side;

a punch aligned with the die hole and having a punch surface facing the first side of the die; and

a pick-up member to retrieve a part from the punch surface on the second side of the die.

41. The apparatus of claim 40, wherein the pick-up member includes a vacuum member.

42. The apparatus of claim 41, wherein the vacuum member includes two independent vacuum ports.

43. The apparatus of claim 40, wherein the die and punch are configured such that the punch extends upwardly through the punch.

44. A method of forming an electrode layer for a flat capacitor, the method comprising:

placing a sheet between a punch and a die, the punch facing a first side of the die;

actuating the punch to punch an electrode layer out of the sheet; and

taking the electrode layer off of the punch through a second side of the die.

45. The method of claim 44, wherein the punch is actuated upward.

46. The method of claim 44, wherein a top surface of the punch extends through the die above the second side of the die before the electrode layer is taken off of the punch.

47. A method comprising:

placing an electrode sheet between a punch and a die;

punching a electrode layer from the electrode sheet, the electrode layer having an aluminum oxide portion and an aluminum tab portion; and

picking the electrode layer off of the punch using a vacuum member having two independent vacuum ports, one port located to attach to the aluminum oxide portion and one port located to attach to the aluminum tab portion.

48. The method of claim 47, wherein punching the electrode layer includes the punch extending upward towards the die.

49. The method of claim 47, wherein the electrode sheet is an anode sheet.

50. A method of forming an electrode layer for a flat capacitor, the method comprising:

providing a carbide die and a carbide punch;

placing an electrode sheet between the punch and the die; and

actuating the punch to punch an electrode layer out of the sheet.

51. The method of claim 50, wherein placing an electrode sheet includes placing a sheet including an aluminum oxide.

52. The method of claim 50, wherein the carbide punch and the carbide die have a hardness of approximately 90 to approximately 100 Rockwell C hardness.